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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/090,802	03/06/2002	Andre Maartens	02814.0054	6653
7590	01/22/2004			
Finnegan, Henderson, Farabow, Garrett & Dunner, L.L.P. 1300 I Street, N.W. Washington, DC 20005-3315			EXAMINER FORTUNA, ANA M	
			ART UNIT 1723	PAPER NUMBER

DATE MAILED: 01/22/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

Application No.	10/090,802	Applicant(s)	MAARTENS ET AL.
Examiner	Ana M Fortuna	Art Unit	1723

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
Period for Reply

### A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

1) Responsive to communication(s) filed on 06 March 2002.

2a) This action is FINAL. 2b) This action is non-final.

3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

4) Claim(s) 1-44 is/are pending in the application.

4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.

5) Claim(s) \_\_\_\_\_ is/are allowed.

6) Claim(s) 1-3,6,7,10-12,18-20,22-25,28-35,37 and 39-446 is/are rejected.

7) Claim(s) 4,5,8,9,13-17,21,27,36 and 38 is/are objected to.

8) Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

9) The specification is objected to by the Examiner.

10) The drawing(s) filed on \_\_\_\_\_ is/are: a) accepted or b) objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11) The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. §§ 119 and 120

12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a) All b) Some \* c) None of:  
1. Certified copies of the priority documents have been received.  
2. Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.  
3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

13) Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application) since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.  
a) The translation of the foreign language provisional application has been received.

14) Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121 since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

#### Attachment(s)

1) Notice of References Cited (PTO-892) 4) Interview Summary (PTO-413) Paper No(s). \_\_\_\_\_.  
2) Notice of Draftsperson's Patent Drawing Review (PTO-948) 5) Notice of Informal Patent Application (PTO-1S2)  
3) Information Disclosure Statement(s) (PTO-1449) Paper No(s) \_\_\_\_\_. 6) Other: \_\_\_\_\_

**DETAILED ACTION**

***Claim Objections***

1. Claims 4-5, 8-9, 13-17, 21, 27, 36, 38 are objected to under 37 CFR 1.75(c) as being in improper form because a multiple dependent claim should refer to other claims in the alternative only and cannot depend from another multiple dependent claim. See MPEP § 608.01(n). Accordingly, the claims 4-5, 9-9, 13-14, 17, 21-27, 36-38 have not been further treated on the merits.

***Claim Rejections - 35 USC § 112***

2. Regarding claim 39, the phrase "such as" renders the claim indefinite because it is unclear whether the limitations following the phrase are part of the claimed invention.

See MPEP § 2173.05(d).

3. Claim 41, 42, 44 provides for the use of a water purification system, but, since the claim does not set forth any steps involved in the method/process, it is unclear what method/process applicant is intending to encompass. A claim is indefinite where it merely recites a use without any active, positive steps delimiting how this use is actually practiced.

Claims 41, 42, 44 are rejected under 35 U.S.C. 101 because the claimed recitation of a use, without setting forth any steps involved in the process, results in an improper definition of a process, i.e., results in a claim which is not a proper process

claim under 35 U.S.C. 101. See for example *Ex parte Dunki*, 153 USPQ 678 (Bd.App. 1967) and *Clinical Products, Ltd. v. Brenner*, 255 F. Supp. 131, 149 USPQ 475 (D.D.C. 1966).

4. Claims 10, 11, 12 are recites the limitation "adjacent membranes"" in lines 4-5.

There is insufficient antecedent basis for this limitation in the claim.

Claim 1 refers only to a single membrane.

5. Claims 12, 25, 26 rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Claim 12 is unclear as to what kind of spacer is intended. Claims 25 and 26 are unclear regarding the inlet and outlet position with respect to the chamber and with respect to the membrane. The inlet and outlet for the feed fluid are shown at an end of the housing or chamber and at the feed side of the semi-permeable membrane, and not at an intermedia position.

### ***Claim Rejections - 35 USC § 103***

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

6. Claims 1, 2, 3, 6, 7, 10-12, 28, 30, 31, 34-35, 37, 39, 40-44 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bond et al (6,161,435) (hereinafter Bond). Bond teaches a unit or system for monitoring fouling of a membrane, the unit contains

the membrane (19), and inlet and outlets for the feed permeate and retentate respectively (14, 24, 23), the membrane is provided on a support (21). (Fig. 1, column 4, line 39, through column 5, lines 1-28). As to claim in claim 39, the fouling of the membrane is controlled by means of an ultrasonic measurement system that employs high frequency "sound waves" (column 10, lines 52-64). The system of Bond is not adapted with the inspection window as claimed in claims 1-2, 30. Bond, however, teaches the inspection window (optical probe) as conventional and provided in the membrane chamber or housing that holds the membrane, and which provide information about fouling only on the outer portion of the membrane, leaving the interior portion of the membrane without being inspected (column 1, last paragraph). It would have been obvious to one skilled in the art at the time the invention was made to provide a membrane housing with the inspection window as disclosed in Bond, if only detecting the fouling of the outer surface of the membrane is intended. It would have been further obvious to one skilled in the art at the time the invention was made to provide the membrane system with both fouling detecting means, e.g. the window and sound waves, as disclosed in Bond, e.g. to obtain a better information about the actual degree of fouling of the membrane.

7. Regarding claims 3, 6, 7, 10-12 Bond discloses the membrane as spiral wound or hollow fiber membrane, which are operated in cross flow mode (figures 1 and 3, column 6, lines 39). The support of 6, 7, 10-12, are also shown by the discussed figures, and further by figure 16, elements 127, 128.

As to claim 28, the vessel or housing material, and the top bottom plates and spacer location are disclosed by bond (column 12, lines 52-59, column 18, lines 19-31). As to claim 29, the position of the window at any section of the housing wall is disclosed in Bond (column 1, lines 60-62). It would have been obvious to one skilled in the art at the time the invention was made to a housing defined between top and bottom plates, to place the window in that area of the housing between the plates.

As to claim 31, reverse osmosis membranes, e.g. TFC are conventionally operated within the claimed pressure range, e.g. 720 psi. It would have been obvious to one skilled in the art at the time the invention was made to monitor the module at conventional or normal operating pressures during the process.

As to claim 35, the using the system in water purification and monitoring the system during filtration is disclosed by Bond (column 1, lines 20-29, column 5, lines 10-28).

As to claim 37, Bond discloses the spaces as not sealed to the membrane (Fig3 ). Claim 39 has been discussed above. Regarding claim 40, maintaining constant pressure and flow rate (column 7, lines 60-65). Claims 41-44 is directed to the process of using the system discussed above in water purification, which is also disclosed by Bond, and also discussed with reference to claim 31.

8. Claims 18-20, 21, 22, 23, 32, 33 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bond et al. (6,161,435)(hereinafter Bond) as applied to claims 1,2, 3, 6, 7, 10-12, 18, 30, 34, 35, 37, 39, 40-44 above, and further in view of Zeiher et al (6,017,459)(hereinafter Zeiher). Regulating pressure and flow in the devise or unit of

Bond is disclosed, however, providing the unit with the controlling valves and pump is not shown in the figure drawings. Reference to Zeiher ('459), discloses a membrane or reverse osmosis unit provided within a housing and provided with valves and pressure control means (Fig 4, element 30 and conduits 42, 43, 44, connected to a pump and pressure gauges in each conduit, as claimed in claims 18-20, as to claims 32033, using a membrane provided with inspection window for detecting fouling in connection with a membrane disposed within a housing is disclosed by Zeiher, the membrane with the window of prove is positioned between the feed tank and the operating membrane (element 10, Fig. 4). (column 1, first paragraph, and lines 37-47). The description of the apparatus 10, including window 21 for detecting film formation on the membrane is disclosed in the reference (column 5, lines 10-39). It would have been therefore, obvious at the time the invention was made to use sample membrane devices including membranes for detecting the level of fouling or contaminants on a membrane surface, and further connect the membrane to other membranes in operation to predict the level of contamination that can be expected during the process and properly control the parameters maintaining the membrane good operation conditions, e.g. cleaning, pressure and flow rate, as suggested by Zeiher. Using the system of Bond in combination with second membrane systems to predict the fouling of a secondary system will have been obvious based on the suggestion of Zeiher, at the time the invention was made.

9. Claims 24, 26 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bond et al. (6,61,435)(hereinafter Bond) as applied to claims 1, 2, 3, 6, 7, 10-12, 18, 30,

34-35, 37, 39, 40-44 above, and further in view of Pearl et al (5,599,447) (hereinafter Pearl). Reference to Bond fails to disclose providing the membrane with a manifold. Pearl teaches inlets to a membrane having support and provided between plates, the manifolds and provided in the inlet and exit conduits (column 3, lines 22-39), the manifolds are designed to provide a better control of pressure drop with the membrane (tangential or cross-flow) system (column 1, lines 1-35). and last paragraph bridging column 2, lines 1-5). In a system as shown in Fig. 1 of reference to Bond, it would have been obvious to one skilled in the art at the time the invention was made to provide the inlet and outlet conduits with manifolds allowing better fluid distribution in the unit, as suggested by Pearl.

### ***Conclusion***

10. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Additional references cited represent the state of the art in membrane visual inspection and other methods of determining fouling of the membrane, also membrane structures including manifold for liquid entering and exiting the device, and conventional spiral wound membrane configuration.

9. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Ana M Fortuna whose telephone number is (571) 272-1141. The examiner can normally be reached on 9:30-6:00 M-F.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Wanda L. Walker can be reached on (571) 272-1151. The fax phone

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number for the organization where this application or proceeding is assigned is (703)  
872-9306.

Any inquiry of a general nature or relating to the status of this application or  
proceeding should be directed to the receptionist whose telephone number is (703) 308-  
0661.



Ana M Fortuna  
Primary Examiner  
Art Unit 1723

AMF  
January 08, 2004